

ABSTRACT

An improved method, system, and device for a compass combining an electronic magnetic compass and an angular velocity sensing gyroscope. One aspect of the invention integrates an angular velocity output signal from an angular velocity sensor or rate gyroscope to determine the angle of motion. An initial magnetic heading is obtained from a geomagnetic sensor and used as a reference for the integrated angular velocity signal. A geomagnetic heading signal is blended with the angular velocity output signal at an adaptive time interval. The adaptive time interval is increased if the reliability of the magnetic field improves and decreased if the reliability of the magnetic field degenerates. Additionally, dynamic calibration of the angular velocity sensor may be performed to correct for gyroscope bias (zero offset), and/or gyroscope scale factor or gain.